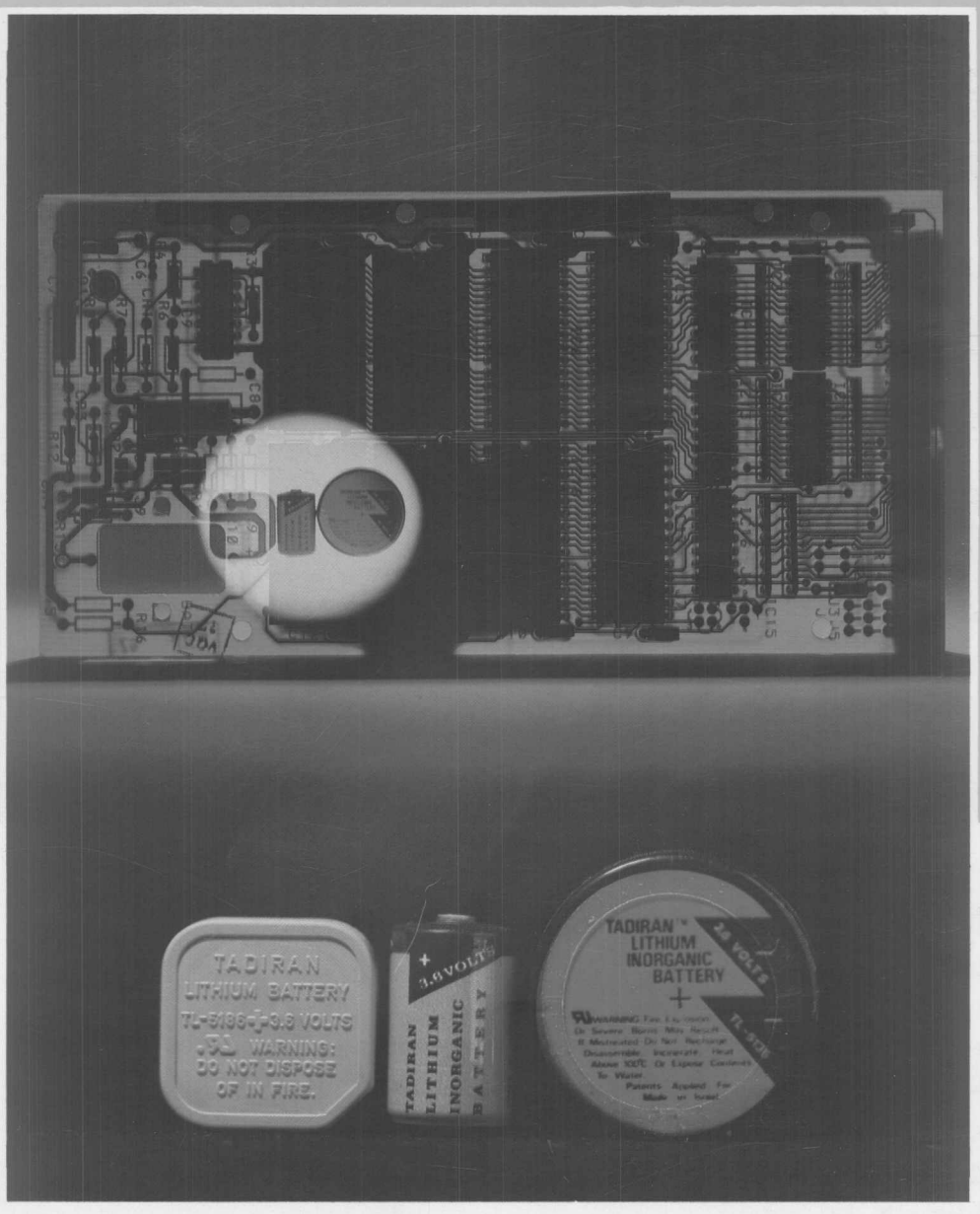
Lithium Batteries for Memory Back-up



• leakproof • wave solderable • high endurance • automatic assembly •

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TADIRAN® Lithium Thionyl Chloride (LTC) Batteries

Memory Back-up

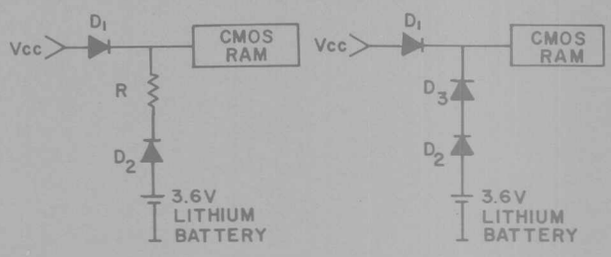
TADIRAN® lithium batteries are designed for electronic circuits. Electronic components in their own right, they provide the power needed by the memories that render them non-volatile. The batteries generally last out the product lifetime.

Here is an ideal standby source for CMOS memories in the new generation of telephony, electronic switchboards, data acquisition, process and production systems.

TADIRAN® LTC batteries comprise a wide range of standard single cells. In addition, multicell batteries, standard and custom-made, are available to meet the requirements of the computer, telecommunications and electronics industries.

Memory back-up circuits with LTC primary batteries do not require battery charging circuits.

Typical memory back-up circuits using lithium batteries are shown below:

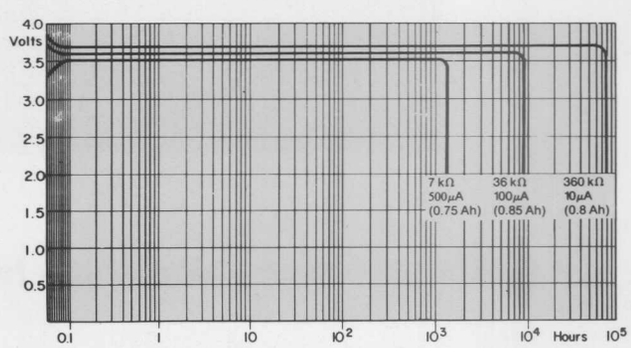


D_1 Blocking diode – main power source protection
D_2 Blocking diode – prevents battery charging
R Limiting resistor
D_3 Redundant diode – battery protection

Cell Features

- ☐ **Stable voltage:** 3.6 V
- ☐ **Leakproof:** hermetic sealing
- ☐ **Long life**
- ☐ **Wide temperature range:** −55 to +75° C
- ☐ **UL approved:** File No. MH 12193
- ☐ **Concentrated energy:** up to 420 Wh/kg
- ☐ **Wave solderable**

Typical Discharge Characteristics (at 25° C)



Product Specifications

Config-uration	Models	Designation Series	Designation Type	Catalog No.	Data Sheet	Max. Capacity mAh	Dimensions mm	Dimensions in	Terminations
Cylindrical	TL-5101 TL-5101/X*	TEL (1/2AA)	TEL/S TEL/T TEL/P	15-51-01-210-000 15-51-01-310-000 15-51-01-410-000	PL-5	850	Ø14.7×25.5	Ø0.58×1.00	Pressure contact Flat strip Round wire
	TL-5104 TL-5104/X**	AEL (AA)	AEL/S AEL/T AEL/P	15-51-04-210-000 15-51-04-310-000 15-51-04-410-000	PL-6	1900	Ø14.7×50.8	Ø0.58×2.00	Pressure contact Flat strip Round wire
	TL-2200	C	C/S C/T C/P	15-51-20-210-000 15-51-20-310-000 15-51-20-410-000	PL-9	5200	Ø26.0×50.3	Ø1.02×1.98	Pressure contact Flat strip Round wire
	TL-2300	D	D/S D/T	15-51-30-210-000 15-51-30-310-000	PL-10	14000	Ø32.9×61.6	Ø1.30×2.43	Pressure contact Flat strip
Wafer	TL-5134	1/10 DEL	1/10 DEL	15-51-34-420-000	PL-2	1000	Ø32.9×6.5	Ø1.30×0.26	Plug-in
	TL-5135	1/6 DEL	1/6 DEL	15-51-35-420-000	PL-3	1500	Ø32.9×10.0	Ø1.30×0.39	Plug-in
	TL-5186 TL-5186/X***	BEL	BEL	15-51-86-420-000	PL-1	370	Ø22.5×6.5	Ø0.89×0.26	Plug-in
Rectangular	TL-5186 TL-5186/X***	BEL	BEL-B	15-51-86-200-000	PL-1A	370	24×24×7.6	0.94×0.94×0.3	Plug-in

NOTES: TL-####/X Vented cell version • * Identical to TL-5111 • ** Identical to TL-5114 • *** Identical to TL-5196

Data subject to revision without notice.

Cell Configurations

TADIRAN® LTC batteries are commonly available in three configurations:

All cells are PCB mountable with the rectangular configuration, ideal for automatic assembly.

Terminations

TADIRAN® LTC cells are available with various terminations.

Cylindrical cells are supplied with three optional standard terminations: pressure contact, flat strip (tab) and round wire (pin). Non-standard terminations are available upon customers' request.

Wafer and rectangular configured cells employ tin plated nickel pin terminations, referred to as plug-in terminations.

TADIRAN® Lithium Thionyl Chloride (LTC) Batteries

Chemistry and Construction

TADIRAN® lithium thionyl chloride cells comprise metallic lithium anode and non-aqueous inorganic thionyl chloride which act both as the electrolyte and as the cathode. The chemical reaction:

$$4Li + 2SOCl_2 \rightarrow S + 4LiCl + SO_2$$

takes place on the active surface of a porous carbon catalyst. The LiCl precipitates on the carbon and the SO_2 which is formed dissolves in the electrolyte without generating gas pressure.

Hermetic packaging guarantees battery shelf life and equipment protection. The cell cover is laser welded to the can while a glass-to-metal seal insulates the positive terminal from the negative cover.

The cylindrical cells' lithium anode is swaged against the inside of the casing wall. With other cells, the lithium, is swaged against the end wall. A non-woven glass separator intervenes between the anode and the cathode. Both the cell casing and cover are made of nickel-plated steel. Models TL-5111, TL-5114 and TL-5196 are vented at the base of the cell casing.

Safety

TADIRAN® LTC cells are designed for safety and reliability. This is achieved principally by a combination of limited short circuit current, limited reactive area and high heat dissipation medium. Hermetic closure ensures long shelf life and leak protection for the circuitry in which the battery is installed.
All the batteries listed have been granted UL recognition under File No. MH 12193.

Recognized under the Component Program of Underwriters Laboratories Inc. File # MH 12193

For further information, contact your local Tadiran sales office.

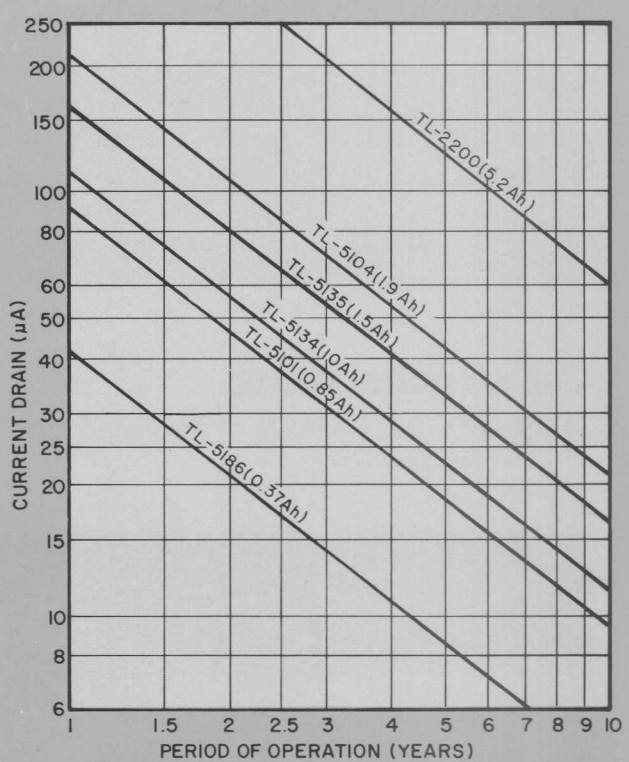
Battery Selection

Battery selection must take into account:

- ☐ current consumption
- ☐ operating time
- ☐ shelf life
- ☐ operating temperature
- ☐ space limits
- ☐ terminations

Loss of capacity due to battery self-discharge is usually negligible and of the order of one percent per annum at room temperature.

A typical battery selection chart, under room temperature conditions, is shown below. For high or low operating temperatures, the corresponding data sheets should be consulted.



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Tadiran Ltd. Components Division POB 75 Rehovot 76100 Israel Tel. (972-8) 444555 Telex 361915 Fax (972-8) 492326

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